

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
5 August 2004 (05.08.2004)

PCT

(10) International Publication Number
WO 2004/066198 A2

(51) International Patent Classification⁷:

G06T

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number:

PCT/IB2004/000138

(22) International Filing Date: 16 January 2004 (16.01.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
03290162.1 22 January 2003 (22.01.2003) EP

(71) Applicant (for all designated States except US): KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): FLORENT, Raoul [FR/FR]; 156 Boulevard Haussmann, F-75008 PARIS (FR). MAKRAM-EBEID, Shérif [FR/FR]; 156 Boulevard Haussmann, F-75008 PARIS (FR).

(74) Agent: LOTTIN, Claudine; Société Civile SPID, 156 Boulevard Haussmann, F-75008 Paris (FR).

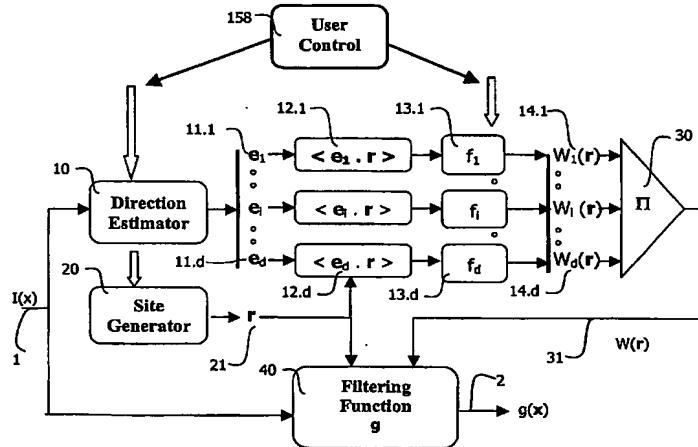
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,

[Continued on next page]

(54) Title: IMAGE VIEWING SYSTEM AND METHOD FOR GENERATING FILTERS FOR FILTERING IMAGE FEATURES ACCORDING TO THEIR ORIENTATION



WO 2004/066198 A2

(57) Abstract: Image processing system for generating a multidimensional adaptive oriented filter to process image data in a number d of dimensions, comprising product means for producing weighted scalar coefficients $[W_1(r), \dots, W_i(r), \dots, W_d(r)]$ of a number d of vectors of an oriented basis of vectors by a number n of local vectors related to each point; combining means Π for producing a set of one-scalar weight coefficients $[W(r)]$ from the combination of the weighted scalar products; and filtering means (g) for producing filtered image data $[g(x)]$ from the combination of the image data $[I(x)]$ with the one-scalar weight coefficients $[W(r)]$. The system further comprises a direction estimator (10) for providing, at each image point, an oriented orthogonal basis of a number d of vectors $(e_1, \dots, e_i, \dots, e_d)$; a site generator (20) for providing n site vectors of a local vector support; and product means for computing d scalar products of vectors of the orthogonal basis by each of the n site vectors. This system may also comprise means for providing weighting means for the scalar products through scalar functions. The filtering means may comprise a weighted normalized sum of the image data by the one-scalar weight coefficients $[W(r)]$.



CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT,

LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.